The Equal Weight View, Agreement, and Commutativity.

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1.0 An Introduction to Disagreement and the Equal Weight View[1]

Disagreement is rife, featuring in almost all areas of discourse. Two friends might disagree about the time the film starts this evening, I may disagree with my fellow philosophers as to whether we should be internalists or externalists about knowledge, religious believers and non-believers disagree about God's Existence. Some of these disagreements aren't troubling. If I've recently checked the cinema timetable and my friend hasn't, their disagreement will have little effect upon my belief; I simply have more or better information than they do. But if I think we have the same information, I'd usually expect my friend to be as capable as I am in forming correct beliefs and there is nothing to make me think that in this particular instance my friend may be unreliable, what then? Can it be rational to continue holding a belief when you know that others disagree with you? If not, then how should you respond on encountering an individual who holds an opposing belief to your own? A spectrum of positions has recently appeared in the Epistemology literature, with the two main schools of thought roughly as follows:

> **Conciliationism:** States that peer disagreement provides an epistemic reason to move your belief in the direction of your opponent's belief and/or suspend belief. How much you are required to move depends on whether a weak or strong version of the position is adopted.
>
> **Steadfastness:** States that peer disagreement does not always provide a reason to alter your belief. It is therefore reasonable in at least some cases of disagreement for at least one peer to retain their belief.

In this paper I want to undertake a detailed investigation of a specific version of strong conciliationism known as the 'Equal Weight' View (EWV) as proposed by Elga (2007). My strategy throughout is to assume that the view is true and discuss what follows. In doing so, I hope to reveal the counter-intuitive nature of the view when interpreted, as is common, as requiring that following disagreement, peers update their respective beliefs by taking a weighted average of their initial credences. In this opening chapter I briefly introduce the disagreement debate, differentiate three versions of conciliationism by motivation and then look in more detail at the EWV. Chapter 2 concentrates on the relationship between all-or-nothing belief and degrees of belief. The EWV was originally proposed on an all-or-nothing framework, but the majority of the literature and associated objections have characterised the view on a degree of belief framework. I think it is therefore important to understand how, if at all, the two frameworks are related. I also seek to clarify where 'suspending judgement' lies on the degree of belief scale.

[1] Many thanks to Allan Hazlett for feedback on earlier drafts and helpful discussion and suggestions. Thank you also to attendees at the Epistemology Research Seminar on 9th March 2011 for comments on a talk which informed this paper and many of the ideas contained within.

Chapter 3 extends the debate to consider the epistemic significance of *agreement*. This will be important in Chapter 4 as in order to assess the effect of the EWV in diachronic cases we need to know not only how an agent should rationally respond to peer disagreement, but also peer agreement. I begin by arguing that in order for their positions to be consistent, conciliationists should accept that peer agreement should increase an agent's confidence in the truth of a proposition. Next, I show that this is contrary to what the EWV (when applied as 'splitting the difference') entails before suggesting that this mechanism for belief revision is not in the spirit of the EWV when applied to agreement cases.

In Chapter 4 I consider a number of objections to the EWV when applied in diachronic cases. This is an advance on the literature which usually restricts its attention to synchronic cases. I will argue that diachronic applications of the EWV give the counter-intuitive result that what it is reasonable for an epistemic agent to believe at any given time, t, is contingent upon the *order* in which epistemic peers (and therefore, higher order evidence) are encountered. Chapter 5 concludes the paper by bringing together the discussion from Chapters 2 to 4 and briefly considering possible avenues for further investigation.

1.1 The Framework for the Debate

The disagreement literature focuses on idealised cases concerning disagreement about some proposition, P, which is objectively either true or false. To further simplify the debate, much of the discussion concerns one-off synchronic disagreements[2].

1.11 Epistemic Peers

It is generally agreed that the simplest case of disagreement is one arising between two epistemic *peers*, each considering the other's judgement as *good as their own.* The majority of writers agree that to qualify as peers two agents must as a minimum satisfy EP1:

> EP1: They have access to and are both familiar with the same evidence and arguments which are relevant to the truth of some proposition.

Clearly, if you have more or less evidence available than your peer then you are not in the same epistemic position from which to evaluate a claim.[3] EP1 isn't sufficient for peerhood however, and there are three ways in which writers have chosen to supplement it. Kelly identifies peers by epistemic virtues:

[2] Note also that whilst in a sense, two people 'disagree' purely in virtue of holding contradictory beliefs, the cases we are interested in here are those in which the agents are additionally *aware* that they disagree.

[3] There is some debate as to whether this needs to be identical evidence, or whether similar evidence is sufficient. Additionally, it is unclear whether 'evidence' here includes only the first-order evidence; evidence which relates directly to the proposition in question, or whether it also includes 'higher-order' evidence, namely, evidence about what your peers believe. I delay this discussion until Chapter 4, Section 4.4.

EP2: They are equals with respect to the general epistemic virtues such as intelligence, thoughtfulness and freedom from bias. (2005, 176)

Alternatively, some writers prefer a definition in terms of track record. Here, it is how reliable a peer has been in the past at assessing the evidence correctly which is important:[4]

EP3: They are equals with respect to their track record in this area of discourse.

Finally, Elga defines an epistemic peer as someone you consider that:

EP4: 'conditional on a disagreement arising, the two of you are equally likely to be mistaken' (2007, 490).

Whilst it seems to be assumed throughout the literature that Elga is also committed to EP1 and hence sameness (or at least similarity) of evidence, I would argue that this is in fact an open question. Suppose I am average in ability at mathematics and taking an undergraduate course and that both I and a mathematics professor (an expert) perform the same calculation. Suppose also that I have similar examples to structure my answer, access to mathematical software and have also checked my answer against other people in my mathematics class. The professor on the other hand just has a piece of paper and a pen. I think it is plausible to say here that, conditional on disagreement, we are equally likely to be mistaken, as in effect, my extra evidence makes up for my lack of 'natural' expertise. If this is the case, then the mathematics professor is my peer regarding this calculation, despite our different evidence. So whilst it is certainly true that two peers can qualify for EP4 by meeting EP1 with either EP2 or EP3, this isn't the only way in which EP4 can be satisfied. Having noted this point, for the majority of this paper I will just continue to assume that EP1 is a requirement for peerhood.

A problem for accounts based around EP3 is that there may be a difficulty in certain domains in identifying a person's track record and/or reliability. Whilst this is relatively straightforward in mathematical and scientific arenas, in other areas, for example philosophy, we rarely know what is objectively correct and so may struggle to determine an agent's past reliability. For this reason, I think EP2 and an approach focused on an agent's virtues is often preferable. However, my interest in this paper is Elga's (2007) view, and hence it is EP4 in the first instance which I will use to determine whether two agents are peers. As a final point, there is also some debate concerning whether peers are those people who are *in fact* your peer or who you'd *consider* to be your peer (although you may in fact be mistaken). Whilst Kelly seems to favour the objective characterisation, Elga prefers the latter. This seems correct. We are fallible, but can only be reasonable in being guided by our assessments of another person's ability, even if these assessments ultimately turn out to be incorrect.

[4] By his (2010) Kelly seems to have moved to adopting EP3 instead of EP2.

To assume otherwise is to assume a falsely externalist perspective of peerhood. I will therefore adopt a subjective take on epistemic peerhood for the remainder of the paper.

1.12 All-or-nothing Beliefs vs. Degrees of Belief

Another issue concerns whether beliefs are best represented in an all-or-nothing framework, or degree of belief (credence) framework.[5] In everyday conversation we sometimes talk about how *confident* we are that something will happen. I may be *highly confident* that it will rain tomorrow for example. On the other hand, we also speak of beliefs as *unqualified*; I believe that I live in Edinburgh. Feldman (2006, 2007) and Elga (2007) present their views on an all-or-nothing framework where there are only three possible doxastic states; believe, disbelieve or suspend judgement. However, both Kelly (2010) and Christensen (2007) present their accounts using credences; the higher an agent's credence for a particular proposition, the higher her confidence in the truth of that proposition. Credences formally represent the strength with which agents believe various propositions. They are usually represented on a scale from 0 to 1, with 1 representing absolute certainty in the truth of a proposition, and 0 absolute certainty of its falsehood.

How exactly these two frameworks are related is a discussion I defer until the second chapter; for now I just want to motivate my reasons for adopting a credence framework. Certainly we are familiar with the idea that we hold some beliefs more confidently than others; I'm fairly confident that I'm going to the cinema this evening, but I'm far more confident the sun will set this evening. A key motivation is disagreement cases in which one of the peers has already suspended judgement; prior to disagreement perhaps one peer is an atheist and the other an agnostic regarding the proposition 'God exists'. These peers still disagree in attitude[6], yet it is unclear in this scenario how they should respond on an all-or-nothing framework. One has already suspended judgement, is he supposed to suspend judgement again?[7] You might say, why shouldn't the peer who has already suspended judgement not just continue to suspend judgement? I think this is unsatisfactory as it results in the asymmetrical situation in which one peer maintains their belief (suspended judgement) and the other changes their belief (from disbelief to suspension of judgement). In effect, the belief of the peer who has suspended judgement counts for more. Representing beliefs as credences also allows us to represent disagreements not only concerning all-or-nothing beliefs, but also disagreements concerning the appropriate credence to hold. Two peers may both believe in God, and yet one with credence 0.7, the

[5] For ease, from here on I will refer to both 'Degrees of Belief' and 'Degrees of Confidence' as 'Credences'. I take it that all are intended to refer to the same thing, namely, an agent's confidence in the truth of some proposition, often also understood as an agent's *subjective probability* in a proposition.

[6] In this paper I follow Macfarlane (2009) in considering non-cotenability to be the hallmark of disagreement. On this view, I 'disagree with someone's attitude if I could not coherently adopt that same attitude […] without changing my mind-that is, without dropping some of my current attitudes' (2009, 6).

[7] This example is taken from Kelly (2010, 117).

other 0.9. As I will argue in Chapter 3 there is at least one way in which this can be construed as a disagreement, and yet it cannot be represented as such on the all-or-nothing framework.

1.2 Conciliatory Views Deconstructed.

With these preliminaries in place, I now want to sketch a brief overview of the various conciliatory positions. No-one in the literature suggests that peer disagreement should *never* have an effect on an agent's belief, rather, the differences stem from differing opinions on when a disagreement should affect beliefs, to what extent, and why. Those inclined towards the more conciliatory end of the spectrum are often motivated by a version of the Uniqueness Thesis (UT):

> **UT**: Given a body of evidence for a proposition p, there is a unique doxastic attitude which it is reasonable to take towards p.

It follows from UT that if two epistemic peers disagree about a proposition, then either one of them is unreasonable in their attitude towards P, or their evidence differs. EP1 prohibits the latter, hence, it follows from UT that at least one of the peers is being unreasonable. In this paper I aim as far as possible to remain neutral about UT. Elga (2007, 496) claims not to be committed to UT[8] and as Christensen (2009) comments; it is an interesting and currently open question as to the extent to which conciliatory views are committed to this thesis[9]. I will not attempt to answer that question here.

1.21 Evidence of Evidence is Evidence

Feldman (2006, 2007) proposes a strong version of conciliationism under which the only rational position for both parties to adopt in the face of disagreement is suspension of judgement. He approaches the debate from an evidentialist perspective, whereby '[an agent] S is justified in believing [a proposition] P at [time] t if and only if S's evidence at t on balance supports P' (2009, 297). Often this evidence takes the form of higher-order evidence; evidence about evidence. Feldman's main proposal is that if an agent learns that another person has evidence supporting a proposition, then one has evidence supporting that proposition oneself hence 'evidence of evidence is evidence' (2006, 223). This principle concerns both the *significance* of first-order evidence, and also the *existence* of first-order evidence in the sense that your peer's belief that P is evidence that there is evidence for P. The latter is generally irrelevant in disagreement cases (given the assumption that peers share evidence) but is relevant to how plausible we take the principle to be. Note that this does not mean that if I learn that you have evidence for P, I automatically obtain your evidence. The key point for Feldman is that 'the proposition that a peer disagrees with you concerning a belief is evidence against

[8] In fact, independent support for the claim that his account does not rely on UT comes from (EP4) which is not committed to sameness of evidence for peerhood. If this is the case, then two people with different evidence can still be peers, and hence still have a reasonable disagreement, contra. UT.

[9] See Ballantyne & Coffman (Forthcoming in *Philosophers Imprint*) for a more detailed discussion around this issue.

the proposition you believe' (2009, 311). As a result you should become less confident and suspend judgement.

1.22 Disagreement as Evidence that you may be Mistaken

Christensen (2007) argues for a slightly weaker version of Conciliationism, on which the disagreement of an epistemic peer gives evidence that one may have made a mistake in interpreting the evidence. As a result, an agent should become less confident in their belief. So unlike Feldman, the evidence lies not in the *content* of the peer's belief, but instead in the *fact* of the disagreement. It is the disagreement itself which is the evidence, whereas for Feldman, it is the reason why the disagreement occurs, namely, your peer's belief, that is the evidence. The difference between Christensen's conciliationism and the EWV in the next section is that, whilst in *some* cases Christensen advocates something 'close to' splitting the difference, he does not want to stipulate that in *every* disagreement with a peer, one should always split the difference. Christensen's conciliationism is therefore the weakest of the three versions under consideration.

1.23 The Equal Weight View

Elga defines the view as follows:

> **The Equal Weight View:** 'Upon finding out that [a peer] disagrees, your probability that you are right should equal your prior conditional probability that you would be right. Prior to what? Prior to your thinking through the disputed issue, and finding out what the [peer] thinks of it. Conditional on what? On whatever you have learned about the circumstances of the disagreement.' (2007, 493)[10]

It follows that if your prior probabilities are such that you think you and your peer are equally likely to be mistaken then you should accord their view equal weight and therefore be no more than 50% confident that you are correct. Throughout this paper I will interpret the EWV as requiring two peers who disagree to calculate a weighted average of their respective credences and it is this average credence which they are then rationally required to hold[11]. To give a very simple example, suppose I believe that P with a high credence (0.8). On the basis of the same evidence, my peer forms a low credence in the same proposition (0.2). The EWV says that on discovering our disagreement, we

[10] Here, the 'circumstances of disagreement' should not include a detailed specification of the chain of reasoning that lead to your conclusion. Otherwise making the relevant conditional probability judgement would involve thinking through the disputed issue, and would therefore fail to be prior to your doing so. Instead, the circumstances of the disagreement include things such as 'the amount of coffee you have drunk, how confident the two of you are in your respective answers (after the calculation, but before the disagreement), how absurd we find the other's answer (2007, 490).

[11] Throughout the paper I will refer to 'weighted averaging' and 'splitting the difference' interchangeably. The former is more appropriate when cases are extended to include 3+ peers.

should perform the following calculation in order to update our beliefs: (0.8*0.5) + (0.2*0.5) = 0.5. So both my peer and I should adopt credence 0.5 that P following our disagreement.

Whether or not this approach accurately captures the spirit of the EWV is a question I will return to regularly in the following chapters. Whilst not unreasonable in the sense that it is what the overwhelming majority of the literature takes the view to imply, it remains an open question as to whether Elga intended to be committed to this kind of 'split the difference' strategy and if he did, how widely he intended its application. However, there is some evidence in Elga's (2007) to suggest that this is how he in fact intended the view to be understood. For example, when talking of steadfast positions, he describes these as views holding that rationality permits peers to be moved 'less than half way in the direction of a peer's contrary assessment', thus suggesting that the contrary position, namely, the EWV, does have this requirement (*ibid*, 490, fn.20).

The difference between the EWV and the other two conciliatory positions discussed is that the motivation for the position is prior to any disagreement arising; it does not arise from the disagreement itself, or from evidence about what a peer believes. Instead, the sole motivation for being conciliatory is the thought that if you consider some to be a peer, then *if* you were to disagree with them, rationally you should assign their belief the same weight as your own. It is the fact that someone is your epistemic peer that informs how you should modify your belief, not the disagreement itself, nor the content of your peer's belief.

1.3 Motivating the Equal Weight View

Elga's main positive argument for the EWV is his bootstrapping argument (2007, 486), which he motivates by consulting our intuitions in perceptual and mathematical cases. For simplicity, both cases discussed here involve disagreements in all-or-nothing belief.

> **PERCEPTION:** You and I are walking down the street one day, and I glance across the road and think that I see our mutual friend Mike walking in the opposite direction. At the same time, you also glance across the road and think that you see our mutual friend James walking in the opposite direction. I then say 'Who was that across the street?' and you reply 'I'm not sure but I think it was James'. What should we do as the result of this disagreement?

Suppose that I regard you as a peer in the sense of EP4 as we've judged a number of similar perceptual claims in the past and I know you've been right about as often as I have, despite some disagreements. The thought behind the EWV is that when we learn that we disagree here, we should think that we are equally likely to be correct; we both have the same evidence after all. It seems obvious that in this type of scenario we should both abandon our original beliefs and suspend

judgement as to who was on the other side of the street. Unless we can obtain further evidence, it would be unreasonable for either of us to continue to hold our belief.

To see why, suppose instead that it is reasonable for me to be 70% confident that I am correct and hence 70% confident that Mike is on the opposite side of the street. Well, for this to be true I would have had to get some evidence that I am a better judge than my friend; I would need some evidence which indicated that I have judged correctly, whilst my friend has misjudged. But this so Elga claims, is 'absurd' (2007, 492). If I think I have got this evidence, then I can't think that we are equally likely to be mistaken, and hence you can't be my peer. In fact, suppose for reductio that over a number of similar perceptual cases, I think in each case I am 70% likely to be correct. It follows that over the course of several disagreements I should become extremely confident that I have a better track record than my friend, and hence become extremely confident that I am the better judge. In effect, I bootstrap my way to confidence, when in fact, simply comparing my response to my friend's gives me no evidence to think that I am correct. In conclusion, it is never reasonable for me to be more than 50% confident that I am correct in peer disagreements.

Further support for the EWV is given by consideration of mathematical cases, one of the most discussed being Christensen's Restaurant Case:

> **RESTAURANT**: 'Suppose that five of us go out to dinner. It's time to pay the check, so the question we're interested in is how much we each owe. We can all see the bill total clearly, we all agree to give a 20 percent tip, and we further agree to split the whole cost evenly […] I do the math in my head and become highly confident that our shares are $43 each. Meanwhile, my friend does the math in her head and becomes highly confident that our shares are $45 each. How should I react, upon learning of her belief?' (2007, 193)

Again, it seems obvious here that both Christensen and his friend should both be less confident in their initial answers on discovering their disagreement. They should therefore accord the two answers 'equal weight', suspend judgement, and work through the calculation again.[12]

1.4 Problems for the Equal Weight View

Despite its initial plausibility, a myriad of objections to the EWV have been raised. These objections and responses have received much attention elsewhere in the literature so here I limit myself to a brief overview, with my own objections presented in Chapters 3 and 4.

[12] Cases like this provide additional motivation for considering non-cotenability of attitude to best represent disagreement (see footnote 6). It is not obvious to me that the fact that an agent holds a belief that 'the bill is $43' entails a corresponding belief that 'the bill is not-$45', and hence not obvious that this is a straightforward case of one agent believing P, and another believing not-P. However, what is obvious is that 'the bill is $43' and 'the bill is $45' are non-cotenable attitudes.

A common objection is that the EWV if correct, and assuming that peerhood is fairly common (which it may not be), would require suspension of judgement in many of our beliefs across multiple domains which is seen to be neither desirable, nor realistic; many of us don't change our views in the face of disagreement, even with people we would acknowledge as our superiors. This objection is perhaps not as telling as it first appears. As discussed at the outset, the disagreement debate is concerned with what we *should* do in the face of disagreement, not what we in fact do. It may be that the EWV just illustrates that we are over-confident in the majority of our beliefs.

Kelly (2010) raises a number of objections around the claim that the EWV takes insufficient account of the *actual* relationship between the evidence and the resulting belief. If an agent who has in fact assessed the evidence correctly and formed a reasonable credence encounters a peer who has mistaken the force of the evidence, then the EWV says they have to split the difference. This is despite the fact that only one peer had assessed the evidence correctly. The EWV therefore appears to ignore the asymmetry between the two beliefs, with the total evidence becoming *'completely swamped by purely psychological facts about what you and I believe'* (2010, 124, my italics). Hence the original evidence ceases to play any role in what it is rational for us to believe. One concern with this kind of objection is that it operates from a third person perspective, one from which we can see which credence is correct. This is not a perspective available to either peer; instead, all they have available is their own first-person perspective. In a sense, the peer who correctly assesses the evidence here is unlucky. In virtue of encountering an epistemic peer who has misjudged the evidence he has to change his belief, moving away from the correct credence. This is unfortunate, but ultimately correct, misleading evidence is still evidence[13].

The final objection considered here concerns a modification to RESTAURANT in which instead of $45 my friend comes up with $450; an amount greater than the entire bill! Intuitively, it seems like you shouldn't have to alter your belief that $43 is the correct share in this scenario. Instead you should just be more confident than your friend that you have the correct answer, but this seems to contradict the EWV. Elga's response is to remind us that your probability that you are right should equal your prior probability that you would be right, *conditional on what you later learn about the circumstances of the disagreement*. The thought is that conditional on you disagreeing *and* finding your peer's

[13] A further response is that, although peer disagreement rationally requires peers to split the difference, it doesn't follow that the belief which both end up with is also rational. So splitting the difference becomes a necessary, but not sufficient, condition for rationality. To have a rational belief, two conditions need to be met, firstly, one is required to split the difference with epistemic peers, and secondly, one needs to have, in fact, responded appropriately to the evidence. This is in fact the approach which Christensen (2011) adopts in response to this very objection.

answer insane you would think it was more likely that you would be right, so the EWV instructs you to favour your own answer.[14]

A worry here is that Elga's response seems question begging. Isn't the whole problem that we *do* find our peer's answers insane, and yet the EWV says we still need to give them equal weight? In 'real world' cases it is often the case that we find our peer's view impossible to believe, but that doesn't mean that we just get to favour our own belief; it is precisely because they are our peer that we find their opposing belief so disturbing. Also, what if symmetry is restored; your friend finds your answer insane as well? Amazingly, Elga just bites the bullet here. If conditional on us disagreeing and finding the other's answer to be insane we think it equally likely that we would be correct then we should just do as the EWV says and be conciliatory.

2.0 What are Degrees of Belief?

Having introduced the disagreement debate in the previous chapter, I now want to take a closer look at how degrees of belief (credences) are understood in the literature and how they are related to all-or-nothing beliefs. The disagreement literature follows Feldman in assuming that 'almost everything I discuss [in terms of all-or-nothing belief] could also be formulated in terms of degrees of belief' (2009, fn.1). However, as Christensen comments 'there is no clear, uncontroversial way of seeing the relation between graded and all-or-nothing beliefs' (2007, 215). Are there then two different types of belief, one in degrees and one full? Or are they just two senses of the same fundamental notion, with one reducing to the other and in which case, which one is the more primitive? A final question in this chapter concerns what it means to suspend judgement with regard to some proposition, P. Whilst usually represented as being equivalent to credence 0.5, I want to argue that it is possible to suspend judgement in the required sense without having any specific credence.

Although I will suggest that we should disregard any option which sees credences as derivative of all-or-nothing belief, that is secondary to my main aim which is to sketch an overview of the various possible ways to understand their relationship and match the various candidates for ''credence' to how the term has been used by authors in the disagreement debate. This will be important in the next chapter as whether or not agreement is understood in terms of credence or all-or-nothing belief may ultimately affect its significance.

2.1 Degrees of Belief as derivative of All-or-Nothing Belief

[14] Christensen has a similar response to Elga, in terms of common sense checking. This kind of checking is much less liable to error than mental arithmetic and hence it is less likely that I am mistaken than my peer; I know my answer follows from a reliable form of reasoning, but I don't have any basis for thinking the same about my friend's answer (2007, 201).

Although many writers recognise the duality of our talk about beliefs, it is rarely claimed that the two types of belief are in fact different in kind. For this reason, this option will not be considered any further here.[15] Let us then begin by assuming that all-or-nothing beliefs are the more fundamental state. If true, what would we mean when we talk of credences? One option maintains that we are in fact referring to all-or-nothing beliefs in probability claims. So, to say that subject S has credence 0.75 that it will rain tomorrow means that S has an all-or-nothing belief that the probability of rain tomorrow is 75%.[16] Here is the *attitude* rather than the *content* that is unqualified.

An immediate question then is; what kind of probability are we talking about; subjective or objective? In formal epistemology, degrees of belief are often defined explicitly in terms of subjective probabilities; my subjective probability that p *just is* my degree of belief that p. Hence as Christensen (2004, 19) comments, if degrees of belief are in fact all-or-nothing beliefs about probabilities, then the probabilities involved must not be understood in this way on pain of circularity. However, if the probability under discussion is objective, understood as facts about the frequencies of certain types of event, then whilst we can have degrees of belief in *single* events it surely doesn't follow that we must also hold an objective probability for this *type* of event. As Christensen comments, it would be odd to identify an agent as having a certain degree of belief in P with that agent's having an all-or-nothing belief about some non-belief related proposition about objective probabilities (*ibid*, 19).

A further problem is that as we often attribute credences to agents who lack the conceptual sophistication required to form this kind of belief about probabilities. Whilst we might speak of a child having more confidence in one thing than another, we don't think that children necessarily have the concept of probability. Furthermore, even if we do think someone is capable of forming beliefs about probabilities, it doesn't follow that they necessarily have or are aware of a corresponding degree of belief. Let us conclude this section by saying that whilst it is clear that people do hold beliefs with varying confidence, we should dismiss the thought that degrees of belief can be reduced to all-or-nothing beliefs about probabilities and seek an alternative.

2.2 All-or-Nothing belief as derivative of Degrees of Belief

Arguably a better way to proceed is to consider degrees of belief as primitive, and ask what follows for all-or-nothing belief. An obvious place to begin identifies an agent's having an all-or-nothing belief that P, with their holding a maximum level of confidence. So to believe that P is to have credence 1; to believe that P is to be certain that P. This requirement seems to strong; one can believe

[15] Interested parties can refer to Christensen (2004, 32) and Maher (1993, 134) for further discussion.

[16] A second option closely allied to the first identifies degrees of belief with all-or-nothing beliefs about the degree to which hypotheses are confirmed by the evidence. On this model, if the evidence makes it 40% likely that some hypothesis H is true, then the agent will form an all-or-nothing belief that the likelihood of H given E is 0.4.

something in an everyday sense, without being certain of it. For example, I might believe that I will go to the cinema later, but without being certain of it. Relatedly, in terms of practical reasoning, to assign a proposition a degree of belief 1 is, on this account, to cease to consider the possibility it is false. But surely we can believe something in an everyday sense without being prepared to stake everything on its truth? It seems that all-or-nothing belief is not the same as maximum confidence.

So what if instead we weaken the requirement and just state that all-or-nothing belief corresponds to a high (but not maximal) level of confidence, Foley's so called 'Lockean Thesis' (1993, 2009). Here, a certain threshold has to be reached for an all-or-nothing belief. We don't want to require certainty, but we also want to stipulate that we should be more confident in our belief than its negation hence our credence should be less than 1, but greater than 0.5 in order to qualify as an all-or-nothing belief.[17] Characterising the relationship in this way is not without its problems. As Frankish (2009, 80) notes, the norms of all-or-nothing belief are different from those of high confidence (Cf. Christensen 2004). All-or-nothing beliefs are usually conceived as being subject to conjunctive closure; we accept that if we believe that P, we ought to believe the conjunction of P with any other propositions we believe. However, if an all-or-nothing belief is equivalent to high confidence, then it will not be subject to the same rules. In fact, Bayesian principles suggest it is frequently rational to assign a lower probability to a conjunction than to any of its individual conjuncts.[18] Despite this, characterising all-or-nothing beliefs in terms of credence exceeding a certain threshold does have the advantage that it fits best with the usage in the literature.

Both Feldman (2006) and Elga (2007) present their views on an all-or-nothing framework which may constitute at least prima-facie evidence that they see all-or-nothing belief as primary. Other than the quote above, Feldman makes no further reference to degrees of belief in his writings and hence it is difficult to determine how he intended the relationship to be understood. However, we shouldn't be too hasty in drawing conclusions. Elga offers a more 'general' formulation of his view in order to accommodate credences, namely that:

> '*Your probability in a given disputed claim should equal your prior conditional probability in that claim*. Prior to what? Prior to your thinking through the claim, and finding out what your [peer] thinks of it. Conditional on what? On whatever you have learned about the circumstances of how you and your [peer] have evaluated the claim. (2007, fn.26, my italics)

[17] An immediate benefit of this thesis is that it sidesteps a potential worry that it is too much to expect an individual to believe very many propositions with exactly the degree of confidence that the evidence warrants. According to the thesis a subject S can rationally believe P even if S's specific degree of belief is somewhat higher or lower than it should be, given S's evidence. All that is required is that S's degree of belief falls above the threshold (Foley, 2009, 37).

[18] Interested parties can refer to Christensen (2004) for a more detailed survey of objections.

Talk of probability here is ambiguous and arguably consistent with accounts appealing to (all-or-nothing) beliefs *about* probabilities or credence *as* subjective probability. However, much of Elga's work elsewhere is in the tradition of Bayesian Epistemology whereby credences are understood as subjective probabilities, hence taking these as primary is the more charitable interpretation.

Kelly (2010) chooses to adopt 'the standard Bayesian convention according to which the credence that one invests in a given proposition is assigned a numerical value between 0 and 1' (2010, 117). Throughout his paper he talks of the reasonable credence for a given hypothesis, H, being a result of the extent to which the evidence, E, confirms H. Again, this indicates an account which understands credences as primary with this interpretation fitting with Kelly's claim that 'the [EWV] cannot be applied in full generality in a framework that treats belief as an all-or-nothing affair' (*ibid*, 117).

Finally, Christensen states that although he doesn't want to commit to a particular threshold which corresponds to an all-or-nothing belief 'it should be uncontroversial that the all-or-nothing attitude that it is rational to take towards P in typical situations is sensitive to the evidence which affects the degree of confidence it is rational to have in P' (2007, fn.28). Christensen certainly seems to be suggesting that degrees of confidence are primary here, as he does earlier in the same paper when he says he wants to focus on degrees of belief as 'evidence may change degrees of belief even when it doesn't change all-or-nothing beliefs' (*ibid*, 188).

In conclusion, with the possible exception of Feldman, degrees of belief are taken to be primary to all-or-nothing beliefs throughout the literature, with most writers equating an all-or-nothing belief that P with a degree of belief above a certain threshold, often at least tacitly assumed to be 0.5.

2.3 Suspending Judgement

If an all-or-nothing belief that P is equivalent to credence greater than 0.5, and correspondingly, an all-or-nothing belief that not-P is equivalent to credence less than 0.5, then what of 0.5 itself? I want to end this chapter by briefly questioning how 'suspending judgement', which here I understand as 'neither believing nor disbelieving' should best be represented on a degrees of belief framework. In the disagreement literature the majority of case studies presented take a form in which prior to disagreement, two peers believe P and not-P respectively with equal credence and hence following disagreement, their credences average to 0.5; they 'suspend judgement'.

However, the EWV is not restricted in application to cases where agents have symmetrical beliefs of this kind. Say for example that my credence that P is 0.9, and my peer's credence that P is 0.4; we still disagree about P (assuming that 0.5 is taken to be the threshold). Then the EWV says I should be 50% confident in my belief and 50% confident in my peer's belief. However, this does *not* correspond to a 50% confidence that P. Instead, my peer and I should both have credence 0.65 that P following our

disagreement. It is only in the special case where our initial credences average to 0.5 that both my confidence in my belief being correct *and* my confidence that P will be 0.5. This indicates that we should understand suspending judgement in the first instance as referring to judgements about whose belief is correct, not whether P is correct[19].

That said, my interest here is to understand what it would mean to suspend judgement about P itself. So consider a case in which an agent's credence that P *is* 0.5 following disagreement, is this suspending judgement about P? Arguably, there is a difference between on the one hand *actively* believing that P with credence 0.5, because this is genuinely what the evidence supports, and on the other hand *suspending judgement* because either you have no evidence or due to recognition that whatever evidence you have is insufficient to support a precise judgement. Surely having credence 0.5 represents a positive commitment to a proposition being as likely as not to be true. Suspension of judgement on the other hands seems to be more an admission that an agent just does not know what would be an appropriate credence. Huber demonstrates this distinction as follows:

> 'Suppose Sophia has hardly any enological knowledge. Her subjective probability for the proposition that a Schilcher, an Austrian wine speciality, is a white wine might reasonably be .5 […]. Contrast this with the following case. Sophia knows for sure that a certain coin is fair [and hence] that the objective chance of a coin landing heads […] equals .5. Under that assumption her subjective probability for the proposition that the coin will land heads on the next toss might reasonably be .5. Although Sophia's subjective probabilities are alike in these two scenarios, there is an important epistemological difference. In the first case a subjective probability of .5 represents complete ignorance. In the second case it represents substantial knowledge about the objective chances.' (2009, 8).

I want to suggest that there are three possible ways to understand 'suspending judgement'. The broadest notion following Feldman (2006, 2007) is that following disagreement both peers should suspend judgement in the sense that they just shouldn't believe anything about P. They therefore have the full interval [0, 1] available to them as potential credences that P. At the other extreme, a narrow understanding takes it as corresponding to a precise credence; 0.5. However, the case above

[19] Kelly (forthcoming) on recognising that only in the 'special case' will agents credences average to 0.5 chooses to avoid the issue by simply defining a view as conciliatory 'if and only if it entails that suspending judgement is a *necessary* condition for being reasonable in a canonical case of peer disagreement' (forthcoming, my italics). He goes on to say that on a framework employing degrees of belief, this necessary condition should be interpreted so as to require a stance of agnosticism, and hence a degree of belief of 'approximately 0.5, which is where proponents of the view think we should be' (Forthcoming, 6, fn.3). This to me seems ad hoc, it isn't clear that proponents are committed to degree of belief 0.5 as being the appropriate disagreement outcome. In fact, even if suspending judgement is a necessary condition for conciliationists, this doesn't entail a degree of belief 0.5 unless suspending judgement is just defined to be degree of belief 0.5. All conciliationists want to say is that we should suspend judgement regarding which peer is correct, not about P.

suggests that credence 0.5 fails to distinguish between cases of ignorance and cases where a subject has detailed knowledge about chances. It also ignores the potential asymmetries in peer beliefs prior to disagreement; if I am highly confident that P, and a peer is only slightly confident that not-P, I will have to move my belief much further than my peer in order to be at credence 0.5.

A more intermediate position follows the EWV and says that when two peers suspend judgement, they suspend judgement as to which of their beliefs are correct. This doesn't automatically entail that the whole interval of positions regarding P is available, contra. Feldman[20]. If my credence that P is 0.5, and my peer's 0.7, then perhaps on becoming aware of our disagreement we would accept that the correct belief lies somewhere in the interval [0.45, 0.75]. By suspending belief here, we aren't completely suspending belief about P, after all, the evidence we have does rule out certain credences, but we are suspending belief as to who is correct and seeking further evidence. This seems correct, for example in RESTAURANT if I say the bill is $43 and my peer $45, we suspend judgement as to who is correct. This doesn't entail however that suddenly every possible answer is on the table. We might think that the correct answer lies somewhere from $40 - $50, we certainly don't think that $2000 is a contender. I want to suggest that in cases of ignorance two peers shouldn't assign credence 0.5 that P, but instead to allow the whole interval from [0, 1] such that any number falling in the interval is a legitimate subjective probability for P. The size of the interval [a, b] reflects ignorance with respect to the proposition, the more evidence gained, the narrower the interval. Where we have knowledge of objective probability, the interval narrows to [0.5, 0.5].

To briefly conclude this chapter, we have seen that the most promising way to unify talk of degrees of belief and all-or-nothing belief is to consider the former as primitive, with all-or-nothing belief corresponding to a degree of belief exceeding a certain threshold. I have also argued that this presentation fits best with accounts in the literature. Finally, we have seen that 'suspending judgement' in an all-or-nothing sense, should not be represented as corresponding to credence 0.5. Instead, it should be represented as an interval, where the size of this interval is informed by both the agent's beliefs prior to disagreement, and the amount of evidence available.

3.0 The Epistemic Significance of Agreement

I now want to turn the disagreement debate on its head and look instead at the epistemic significance of peer *agreement*. Differing motivations aside, all three conciliatory views canvassed in chapter 1

[20] This intermediate approach is perhaps most obvious when we consider a larger group of peers who disagree, with a corresponding range of degrees of confidence. Suppose that the majority of credences are distributed evenly around 0.2 and 0.8. If we 'split the difference' then the rational belief following discovery of disagreement becomes 0.5. But in the case described, the peers actually seem to have better evidence that the rational credence to hold isn't 0.5, but instead either 0.2 or 0.8, or somewhere in the interval between. They should therefore suspend judgement that P, but without settling on any precise value. A similar point to this is made by Thurow (forthcoming, 10).

entail similar rational requirements on an agent's belief following disagreement. However, it doesn't immediately follow that all will similarly impose the same requirements following agreement. Despite this I think that it is plausible that all conciliationists should be committed to something like the following principle:

> **AGREEMENT:** If you believe that P and learn that an epistemic peer believes that P, then you ought to raise your confidence that P.

Whilst comments on agreement are few and far between in the literature, this does seem to be the default position. For example, Christensen claims that if both I and a peer do a calculation and reach the same answer, this should make each of us more confident in our answer, further stating that '[he does] not expect these judgements to be very controversial. Even most [steadfast] philosophers concede that, in cases like this, the disagreement of a friend should make me less confident, and *taking the agreement of a friend to justify increased confidence is just the other side of the coin'* (2011, 6, my italics).[21]

After motivating AGREEMENT for both Feldman's (2006) and Christensen's (2007) respective accounts, my main aim in this chapter is to demonstrate that whilst the spirit of the EWV *is* consistent with agreement raising confidence, its usual application as 'splitting the difference' is not. When belief revision is understood in this way the view diverges from other conciliatory views and suggests that following agreement two peers should remain fixed in their respective degrees of belief. We therefore have reason to divorce the EWV from 'splitting the difference' in agreement cases, which may in turn give some grounds for thinking that this method for belief revision should be disallowed across the board.

3.1 How should Agreement affect Belief?

I begin by modifying PERCEPTION and RESTAURANT such that the two peers are in agreement. So in PERCEPTION-A, both my friend and I *agree* that is our mutual friend James on the other side of the street, and in RESTAURANT-A, both my friend and I *agree* that the bill totals $43. What now? It seems uncontroversial that as a minimum in each case both peers are reasonable in continuing to hold their beliefs on discovering their agreement, but should they in fact be more confident once they find out a peer agrees?

[21] There will be at least some cases where peer agreement should not raise confidence. For example, if I know that my peer and I have both formed our belief purely on the basis of the testimony of the same expert, then our beliefs are not suitably independent of one another to count as new evidence. If I were to count my peer's belief as evidence here, I would effectively be double counting the same evidence twice. Nevertheless, there are plenty of cases where my peer and I do form our beliefs independently, and it is these cases which are of interest in this chapter.

Consider Feldman's (2006, 2009) proposal that a peer's belief is new higher order evidence which directly supports or undermines the proposition, P. In cases of disagreement, a peer's belief that not-P is evidence which counts against P, hence the requirement that we reduce our confidence in P accordingly. What I want to say here is that in the same way, evidence that a peer believes P should be evidence that supports P. Hence I am rationally required to be more confident on learning of a peer's agreement and associated belief. For example, in RESTAURANT, a peer has independently carried out the same calculation and reached the same answer. This provides independent evidence and confirmation that $43 is the correct answer.

To put this in a slightly different way, it is fairly uncontroversial in the testimony literature that, absent any defeaters, the testimony of a peer provides an agent with evidence that can be used to form a belief. If I don't have any evidence relating to a proposition other than a reliable peer's belief that it is true, then I am reasonable in also believing that P; my peer's belief is evidence that supports P. If this is the case then it would seem odd not to similarly count a peer's belief as evidence in cases where I also had other evidence. In RESTAURANT, if I hadn't done a calculation, I would accept my peer's calculation as evidence that the bill comes to $43 a head. The fact that I have also carried out the calculation doesn't entail that my peer's calculation suddenly ceases to be evidence. In effect, the testimony of a peer provides new evidence in support of a *new* belief, and an epistemic peer's agreement functions in a similar way, but instead acts to support *existing* beliefs.

On Christensen's account a peer's disagreement functions as evidence that I could be mistaken. If knowing it's more likely that I've made a mistake in believing P means I should be less confident that p, then knowing it's less likely that I've made a mistake in believing p surely means I should be more confident that p. To support this intuition Christensen asks us to consider a case where I have a very high credence (0.92) in some proposition, P. My initial inclination was actually to be more certain that P, but I scale back my confidence a bit as I know I make some mistakes. I then learn that my friend, an epistemic peer, has done the same sum, and become 0.91 confident in P. '*I suppose that we have arrived at our respective credences in the same way'* (2011, 6, my italics). Christensen claims that on learning of my peer's high credence I should be *more* confident that I didn't make a mistake. If that is true, I should raise my confidence beyond 0.92.[22] Whilst it isn't entirely clear whether Christensen

[22] Note that Christensen's case relies to some extent on the fact that I think my peer has also adjusted his belief to account for fallibility. If he had not, then perhaps Christensen would have to say that I should be less confident here as the EWV would suggest; I would have received evidence that I was over-confident. Despite this, I do think Christensen is correct here that we do often adjust our beliefs in this way to allow for the potential of mistakes, either due to recognition of our fallibility, or perhaps because we don't think we have sufficient evidence to be more confident. However, I am less convinced that as a result we would always scale down our confidence in P. If there is a possibility I could be mistaken about the import of the evidence, then why think that this mistake would manifest itself in over-confidence, why is not equally plausible that I could be under-confident that P, in which case, I should in fact raise my credence to compensate? The basic point is that, whilst I agree that fallibility can only act as to reduce confidence in my belief forming mechanism, it remains an open question as to whether this should lead to a higher or lower degree of belief that P.

intends either i) the close proximity of the peer's respective beliefs, or ii) the fact that both exceed an unspecified threshold to be doing the work here, on either reading, it certainly seems plausible that the peer's agreement makes it reasonable to be more confident in this type of scenario.

Unlike the other conciliatory positions, the EWV doesn't immediately say anything about peer disagreement providing evidence. Instead, the motivating thought is that we should consider a peer to be as someone as likely as ourselves to be correct (or mistaken) in a disagreement. This motivation is identical in cases of agreement. Regardless of whether or not we are agreeing or disagreeing with a peer, in determining the truth of some proposition, P, we should think that we are equally likely to be correct. Elga does specifically comment on agreement to say that the more general formulation of his view (given in section 2.3) 'governs ones response not just to cases in which your [peer] disagrees, but also to cases in which she *agrees* or suspends judgement' (2007, 296, fn.26, my italics). This removes an immediate objection to my discussion so far, namely that as defined in section 1.23, the EWV only claims to say something about how someone ought to respond to *disagreement*[23] and hence cannot be criticised on the basis that it gives an odd result in *agreement* cases. Clearly Elga does intend his view to be fully general in its application.

3.2 Two Types of Agreement

Unfortunately, applying the EWV as 'splitting the difference' returns a result inconsistent with AGREEMENT. To say that two peers agree that P is in the first instance to say that they share an all-or-nothing belief. It is a further question what credence(s) they assign to the proposition. There are two options:

a) **Agreement in Credence *and* All-or-Nothing Belief:** Both assign P the same credence, 0.8 for example.

b) **Agreement only in All-or-nothing Belief:** They assign P different credences, 0.7 and 0.8 for example. Effectively, one is more confident that P than the other.

Based on his reasoning in the case study in section 3.1, Christensen seems to be committed to both (a) and (b) being agreement; if two peers both hold credences greater than a certain threshold, then their agreement should allow both to be more confident[24]. It seems uncontroversial that on any account (a)

[23] Thanks to Allan Hazlett for raising this concern in e-mail conversation.

[24] One disadvantage of Christensen's approach is that, assuming for arguments sake that the threshold for all-or-nothing belief is 0.5, he would be committed to two peers with credences 0.55 and 0.95 being in agreement and hence *both* being rational in becoming more confident that P. However, two peers with credences 0.45 and 0.55 respectively would count as disagreeing, despite the fact that in the latter case, the difference in credence was only 0.1, where as in the former case, the difference was 0.4. Intuitively, the closer the proximity of the peer's beliefs, the more confident they should be that they are in the correct ball park as regards holding a reasonable credence given their evidence.

constitutes agreement; if this isn't agreement, then what is? However, the result of 'splitting the difference' in (a) does *not* result in an increase in confidence for either peer. Instead, both agents would remain at credence 0.9[25]. Even worse 'splitting the difference' treats (b) in an identical manner to *disagreement*, with both agents moving to credence 0.85[26]. Although one peer is entitled to be more confident that P following the agreement, the other has to become *less* confident. The EWV when understood in this way seems to be more focused on difference in credence rather than any specific threshold as a guide to how peer agreement should affect an agent. The result being that the EWV is on the face of it, surprisingly, incompatible with other versions of conciliationism in agreement cases.

But is there is any interpretation of the credences in (b) which *is* consistent with seeing this as a disagreement?[27] One possibility follows Macfarlane in claiming that, in some sense 'I disagree with someone's attitude if I could not coherently adopt that same attitude […] without dropping some of my current attitudes. […] I disagree with attitudes that are not cotenable with my current attitudes.'(2009, 6).[28] If disagreement is understood as non-cotenability of attitude, then there needs be no single proposition that one agent takes a positive attitude towards and the other a negative attitude in order to disagree. Instead all that is required is a difference in credence. Macfarlane's own example is as follows:

> 'Ned, the weather reporter for Channel 4, has a credence of 0.7 that it will rain tomorrow. Ted, the weather reporter for Channel 5, has a credence of 0.8 that it will rain. Ned could not adopt Ted's attitude without change of mind, so we have a case of non-cotenability, even though both Ned and Ted take it to be pretty likely that it will rain. This is a kind of disagreement, though it is not the first thing one thinks of when one thinks of disagreement.' (*ibid*, 6)

There seem to be two possible readings of this case. The first takes the proposition under discussion to be P: 'It will rain tomorrow'. On this reading, Ned and Ted's credences represent 70% and 80% confidence that P respectively. Here they do share the same attitude towards P, both think that P is true, and hence they are in agreement. The second reading however takes the proposition under discussion not to be P, but instead P*: 'Given the evidence, it is 70% likely that it will rain tomorrow'. Ned believes that P*, Ted believes Not-P* (instead believing that given the evidence, the likelihood of rain is 80%). I think this second reading is how Macfarlane intends us to understand the case; as one in which Ned and Ted hold non-cotenable attitudes. On this reading, although both Ned and Ted on

[25] To see this, calculate (0.9*0.5) + (0.9*0.5) = 0.9.
[26] To see this, calculate (0.8*0.5) + (0.9*0.5) = 0.85.
[27] Though note, even if there is (a) still remains problematic.
[28] Disagreement in all-or-nothing belief captures a special case of non-cotenability, one in which attitudes are limited to attitudes of full-belief.

balance believe it will rain tomorrow, we don't want this 'agreement' to raise their confidence that it will rain, at least not in the sense of raising their predicated chances of rain. If it did, then we would effectively be saying that our beliefs about the rain can actually directly affect the weather! Clearly my belief that it will rain tomorrow in no way serves to make this more likely.

So on the second reading they do disagree, and hence splitting the difference *would* give a reasonable result; a convergence on 75% likelihood of rain seems plausible given their total evidence. However, I think that to read the case in this way would be to mistakenly fall into the trap of treating credences as beliefs about probabilities, something which I explicitly ruled out in the previous chapter. In effect, Ned has a belief that the probability of rain tomorrow is 70%. But to be able to apply the EWV we would need to know the credence that he assigns to P*, not the content of P* itself. We need to know for example how confident Ned was that P*, and how confident Ted was that not-P*. Only then could we assess this disagreement by applying the EWV. In the disagreement debate, the target cases are those which follow the first-reading, not the second. The moral of the story is that we need to be careful to ensure that in assessing (dis)agreement cases, we accurately locate exactly which proposition is the locus of the disagreement.

In fact a closer inspection of the definition of the EWV in Chapter 1 reveals that it *is* consistent with agreement raising confidence. The spirit of the view is just; update your credences, based on your prior probability that you'd be right, given a disagreement. So when it comes to agreement, you should update your credences, based on your prior probability that you'd be right, given peer agreement. And you might think that it's more likely that you'd be right, conditional on a peer agreeing. Generally, it is more likely that two people are right than that one person is right.[29] And hence, the EWV *is* consistent with becoming more confident following agreement.[30] The problems discussed in this chapter therefore seem to lie not with the view itself, but with its common interpretation as requiring a split-the-difference approach.

In conclusion the EWV cannot be applied as weighted averaging in agreement cases, at least if agreement is defined in terms of sharing a credence above a threshold. It is plausible, or at least desirable that any method for belief revision should be consistent across disagreement *and* agreement cases. Arguably then, we additionally need to seek an alternative way to understand the EWV in

[29] This kind of result gains independent support from Condorcet's (1785) Jury Theorem. Condorcet showed that if members of a jury i) were each more than 0.5 reliable at making the correct judgement, ii) each made their individual judgements independently and iii) revealed their own judgement truthfully when the group voted, then two consequences follow. Firstly, the probability of the majority making a correct judgement on the issue is greater than any one individual making a correct judgement, and secondly, as the number of individuals in the group increases, the probability of the majority making the correct judgement approaches 1. This lends independent support to the thesis that the agreement of epistemic peers is a reliable indicator of the truth of a proposition, assuming the three conditions are met.

[30] Many thanks to Allan Hazlett for clarifying this point.

terms for belief revision following disagreement, albeit one which returns similar results to 'splitting the difference' in paradigm disagreement cases such as PERCEPTION and RESTAURANT.

4.0 The Equal Weight View and Commutativity

In this chapter I consider the implications of the EWV when applied in diachronic cases. Although the literature makes no claims to address instances of extended disagreement, I think that any reasonable account of belief-revision should surely be generally applicable rather than restricted in application to one-off synchronic cases. Despite my arguments in the previous chapter that we should seek an alternative method for belief revision, in the absence of a suitable alternative I continue to apply the EWV as 'splitting the difference' here. Although not ideal, it does return the 'correct' results in a number of paradigm disagreement cases and so will serve as a suitable proxy. In the concluding chapter I will sketch some preliminary thoughts as to what an alternative mechanism for belief revision might look like.

My hypothesis throughout this chapter is that the EWV fails to respect the following principle:

> **The Commutativity of Evidence Principle (CEP)**: 'To the extent that what it is reasonable for one to believe depends on one's total evidence, historical facts about the order in which that evidence is acquired [should] *make no difference to what it is reasonable for one to believe*' (Kelly, 2008, 7, my italics)

Feldman specifically comments on the order that people receive information in disagreement cases noting that the 'order in which one gets one's evidence on the topic makes no difference in cases like this' (2007, 204). Now, whilst this does seem uncontroversial for the *first order* evidence in support of the proposition in question, in this chapter I want to look specifically at situations in which it is the *higher order* evidence about what one's epistemic peers believe which is causing the change in belief each time. Here it does seem that the order in which peers, and therefore higher order evidence is encountered can play a role in resultant belief.

I begin this chapter by motivating my reasons for accepting a version of CEP. I then consider an objection due to Wilson (2010) relating to the interaction between applications of the EWV following disagreement, and conditionalization on other evidence. Ultimately, I argue that these kinds of cases are unproblematic for the view. Despite this, I think there is a further worry that diachronic applications of the EWV fail to respect commutativity. To show this I begin by asking whether epistemic peers' beliefs can effectively cancel each other out, initially considering the case of an epistemic agent confronted by a single epistemic peer whose belief changes with time, and then extending the case to consider the same agent when confronted by two peers with beliefs which are equally far from the agent's own belief, but in opposing directions. The remainder and focus of this

chapter is then concerned with whether the order in which epistemic peers (and therefore, higher order evidence) are encountered can and should affect an agent's resulting credence.

4.1 The Commutativity of Evidence Principle (CEP)

In short, CEP represents the requirement that the order in which evidence is encountered make no difference to the resulting belief.[31] Some conciliationists may be committed to CEP purely in virtue of their prior commitment to the Uniqueness Thesis (UT).[32] To recap, UT says that given a body of evidence for some proposition P, there is a uniquely reasonable doxastic attitude to take towards P. It follows that if two people share the same total evidence, then they should have the same belief. Hence even if the two peers receive the same evidence but in the different order, the net result is that they still have the same evidence, and hence should still have the same belief. So UT entails CEP.

Although I think there are ways to motivate the principle independently of UT, see for example Kelly (2008, 614-619), I also recognise that it may not be automatically irrational for two agents who receive the same evidence in a different order to end up with different degrees of belief. This may just be as a fact about the way in which we assess evidence and counter-evidence for our beliefs. Despite this I also think that once an agent becomes aware that their beliefs are susceptible to order differences in this way they should act to compensate. For example, having read Kelly's (2008) paper, I should now seek to compensate for the bias that results from the order in which I first encounter evidence by paying equal attention to evidence which counts in favour and against my beliefs. In effect, the CEP is an idealized principle; an ideally rational agent's beliefs should not be affected by the order in which evidence is encountered. Even if we do in fact sometimes respond to evidence in an uneven way, it still isn't desirable that we do. I think any reasonable account of disagreement should respect CEP and in the remainder of the chapter I go on to discuss various ways in which the EWV might fail to do so, assuming throughout that the subjects discussed are aware of such a potential bias in their assessment of evidence and wish to act to correct it.

4.2 Conditionalization and Commutativity

Generally, epistemic agents who adopt the EWV will update their beliefs by a) averaging out credence's with epistemic peers when they learn of disagreements and b) conditionalizing based on

[31] This principle has received much attention in the Bayesian Epistemology literature where it is widely accepted. Jeffrey (1983) proposed a method for conditionalizing upon new evidence which, unlike traditional conditionalization, allowed agents to update their beliefs based on incomplete or uncertain information. Unfortunately, Jeffrey Conditionalization fails to respect commutativity, a result which Doring describes as 'an embarrassment against which a rational agent will want to safeguard' (1999, 384).

[32] This connection between Uniqueness and Commutativity was suggested to me by Allan Hazlett in conversation. It relies upon the metaphysical assumption that the order of acquisition of evidence doesn't destroy the identity of a body of evidence.

other evidence. I begin by considering an objection due to Wilson (2010) resulting directly from a perceived failure of commutativity between applications of the EWV, and updating in light of other evidence.[33] He claims that 'in general, the combination of conditionalization on other evidence and application of the equal weight view by epistemic peers will not satisfy the requirement of commutativity' (2010, 323). Hence, the credence's that the agents will end up with will depend on the *order* in which they receive new evidence and learn of disagreements.

He asks us to consider the following case: Two epistemic peers have equal access to information about coin tossing dynamics and bias distributions. Based on this evidence, they come to different conclusions about the bias of a coin. One thinks that the bias towards heads is 80% likely, the other 20% likely. Both are sure that the coin is fair, or it is biased in such a way that it lands heads each time; these are the only two options. Wilson's claim is that, the EWV predicts a difference in the final credence for the two agents depending upon whether the coin is tossed first, or they confer first.

CASE 1: The Agents Compare First (EWV then Conditionalize)[34]:

At t1, the agents discuss their beliefs and on the basis of the disagreement, the EWV kicks in. Both therefore end up with credence 0.5 that the coin is biased.

At t2, the coin is tossed and comes up heads. The agents both conditionalize on this new information, giving a resulting credence of: $0.5/((0.5+0.5(1-0.5)) = 0.666\ldots$

CASE 2: The Coin is Tossed First (Conditionalize then EWV):

At t1, the coin is tossed and comes up heads. This evidence supports the hypothesis that the coin is biased towards heads. Both agents conditionalize their existing credence's on this new information, giving the following resulting credence's:

Agent 1: $0.8/((0.8+0.5(1-0.8)) = 0.888\ldots$

Agent 2: $0.2/((0.2+0.5(1-0.2)) = 0.333\ldots$

At t2, the agents then discuss their beliefs, discover that they disagree, and apply the EWV, giving a resulting credence of 0.611111 that the coin is biased. Wilson goes on to demonstrate that other initial credence distributions that average to 0.5 (0.9 and 0.1 for example) are similarly problematic. In fact, he shows that, if agents compare views first as in Case 1, their credence's will always go to 0.6666…, regardless of their initial divergence. If however, they flip the coin first, then their final

[33] Similar objections are considered by Shogenji (2007) and Fitelson and Jehle (2009). Shogenji notes that for this objection to work, we first need to make two assumptions; i) An agent's degrees of confidence are probabilistically coherent and ii) An agent's degrees of belief are updated in accordance with the Bayesian rule of conditionalization when new evidence is received (2007, 17).

[34] All calculations in this section are taken from Wilson (2010, 324)

credence's will vary between 0.5 and 0.6666 depending on how far their initial credence's varied. The end result when comparing first will always be different from the end result when flipping first.[35] The order in which evidence is received leads to a different resultant belief, and the greater the initial disagreement, the higher the failure in commutativity.

By way of response, I am unconvinced there is any difficulty here as the cases stand. In both Cases 1 and 2 above, the disagreement is regarding whether the coin is biased or not. However, in Case 1, the agents become aware of their disagreement at t1, their shared evidence is therefore all the evidence they had both considered in reaching their original credence. What happens after the disagreement (i.e. the coin being tossed) is irrelevant to the disagreement; it would only become relevant if then at time t3, they discussed their respective credence's again. In Case 2 however, the agents become aware of their disagreement at t2. At t2, their shared evidence is all the evidence they had at t1 *and* the fact that the coin landed heads when tossed. In effect, Wilson is drawing a conclusion from two cases where the agents have different evidence available to them at the point of disagreement, and arguing that the different resulting credences are problematic. However, differing credences are just what we should expect if the agent's beliefs are sufficiently responsive to the evidence as it changes. Hence Wilson's argument here does not provide a counter-example to CEP.

4.3 Diachronic Disagreement between Two Peers

My focus in the remainder of the chapter is on diachronic applications of the EWV itself. The first case I want to consider is one in which an agent receives higher-order evidence which points in opposite directions:

> Suppose we have two epistemic peers, Tom and Max. At t0, based purely on the first-order evidence, e, Tom forms a high credence that God exists (0.8) and Max has a low credence in the same proposition (0.2). At t1, they discover their disagreement, the EWV kicks in, and both revise their credence to 0.5. At t2 (a month later say) they fall into discussion again, and Max says that he now believes that God exists with a high credence (0.8).

So what should Tom believe now? At t2, the only reason that Tom is currently in a position of agnosticism (0.5) is that Max, an epistemic peer, disagreed with him at t1. If at t2 the same epistemic peer is now agreeing with Tom's original belief, then assuming they remain epistemic peers, isn't Tom reasonable in once again believing that God exists and furthermore, reasonable in believing this with his original credence? The thought here is that his only evidence for thinking otherwise, namely Max's disagreement, is effectively cancelled out by Max's change in belief.

[35] An exception is when the agents start with the same credence, but then here, there is no disagreement in the first place (2010, 324)

Before answering that question, let's see what the EWV suggests should happen at t2. At this point, Tom's current credence is 0.5, and Max's 0.8, so *assuming they are still peers* they converge to 0.65, 0.15 degrees below Tom's original belief at 0.8.[36] But are they still peers at t2? To answer this question, we need to know *why* Max has changed his belief. There are two options; either i) Max has the same evidence at t2 as he had at t1, or ii) Max has new evidence at t2. Taking (ii) first, this new evidence could be in the form of new first-order evidence; he read a new textbook for example. Alternatively, perhaps it is new higher-order evidence; he spoke to one or more different epistemic peer(s) who believed in God and revised his belief upwards accordingly, or a combination of both. But, if Max has new evidence which Tom doesn't have then they may not be epistemic peers at t2, so the EVW doesn't apply.

So what instead of (i)? Perhaps Max just reasoned further on the existing evidence and the arguments Tom put forward for his belief; on reflection, he is now convinced that the evidence is more in favour of God's existence than not. This raises a further question; does a peer's reasoning count as further evidence? Should Tom take both Max's original *and* new beliefs into account, or should he only ever take into account Max's most up-to-date belief?

If Tom encountered different peers at t1 and t2 then Tom would be required to take both beliefs into account. This is because both peers provide him with some new higher-order evidence, namely their respective beliefs. So, assume Max's reasoning on the same evidence for longer also qualifies as new higher-order evidence for his peers. If so, then Tom has received two pieces of information from the same peer. At t1, he learnt that a peer had formed a low credence based on some evidence, E. Then at t2, he learnt that the same peer had formed a high credence based upon E+, (the original evidence, the higher-order evidence that a peer (Tom) had a high credence based upon E, and further reasoning about E). So perhaps Tom should take both credences into account in revising his own belief at t2.

However I want to argue that Tom should in fact discount Max's original credence at t1 as this is now effectively redundant; Max will build his old belief into his updated belief at t2. Elga (2007, 505) comments on precisely this type of scenario, one in which you have re-evaluated an earlier claim that you previously rejected, and which, were it not for your past belief, you would now regard as true. Effectively, Max at t2 disagrees with his earlier self at t1, and hence needs to determine which self he would expect to be right in this sort of disagreement. Factors which might affect the answer include whether he discovered a mistake in his old reasoning. If so, then he should discount his old answer as he wasn't a peer at t1. Elga is saying here that Max will build his old credence into his updated belief. Tom should therefore just discount Max's old belief and just update based on what he would have

[36] In fact, it is impossible for Max alone to get Tom back to 0.8 at t2 as to do so, he would need a belief of 1.1 ((1.1+0.5)/2) = 0.8), and this is impossible; no agent can have a degree of belief greater than 1.

believed at t1 had Max's credence been 0.8 and hence, return to a credence of at least 0.8[37]. To do otherwise would be to be in danger of double-counting Max's belief at t1.

In fact, regardless of which is correct here, it is not obvious that Max is Tom's peer in this scenario. Remember that on Elga's definition of peerhood, EP4, in order for two people to be peers they each have to consider each other to be equally likely to be mistaken in the event of a disagreement. If Max just started believing P (having previously believed not-p and having after that been agnostic) then surely this type of erratic belief changing is an indication to Tom that Max is unlikely to be correct, and hence Tom may feel that they are no longer peers. However, in this case Tom wasn't obliged to suspend belief in the first place; Max was never his epistemic peer. So Tom is certainly permitted to return to his original credence (0.8) at t2.

4.4 Does Higher Order evidence affect Peerhood?

The above section raises the following question; is higher-order evidence included in the 'shared evidence' so often referred to in definitions of epistemic peerhood? Could someone fail to be your peer on the basis that they had failed to talk to the same peers that you had? Shogenji defines an epistemic peer as 'someone who possesses the same empirical evidence on the issue as one does, and who possesses the same level of relevant epistemic competence as one does' (2007, 2). This certainly suggests that higher-order evidence does not contribute towards peerhood. Other definitions are less clear. For example, Kelly states that 'they are equals with respect to their familiarity with the evidence and arguments which bear on that question' (2005, 177). One reason for this lack of clarity may just be that it isn't really an issue until we consider the type of extended cases I'm looking at in this chapter.

In fact, I think it is fairly obvious that higher-order evidence should play a role in determining peerhood. When we learn we disagree with a peer and we also learn that part of the reason why that peer holds a certain belief (say not-P) is that they have spoken to several peers with the same belief, this is likely to cause us to become more confident that (not-P). After all, had we spoken to those peers ourselves we would have become less confident that P. It follows that in order for two people to qualify as peers they need to share both first-order *and* higher-order evidence; their total evidence needs to be the same. This is a very strong requirement and has the unfortunate result that any two people who haven't come into contact with exactly the same peers would immediately fail to be peers. For this reason, I want to suggest that we weaken the requirement slightly and allow that two people can be peers if they have *similar* evidence, even if this isn't *identical* evidence.

[37] I say 'at least' here, as following discussion in the previous chapter, there may be reason to think that Max and Tom's agreement in confidence at 0.8 gives them reason to revise their confidence upwards.

In reality, it is extremely unusual for two peers to even have identical first-order evidence. Even in cases like PERCEPTION the two peers have *similar* but not *identical* evidence. My belief is something like 'from this angle, it looks like Mike is across the street' and my friend's belief is 'from this (slightly different) angle, it looks like James is across the street'. On my previous definition, we can only be peers if we share evidence. If we don't, then we are no longer peers, and hence, there is no rational requirement to alter our beliefs when we disagree.[38] There seem to be two distinct ways in which two agents can be said to share evidence in a way which qualifies them for peerhood. On the one hand, two agents can be peers with respect to some proposition P if they have similar evidence, in the sense that the evidence is equally good. This seems to be what is going on in PERCEPTION. Barring any obstructions in the middle of the street, the agent's evidence is equally good; neither is better positioned than the other to determine who is across the street.

On the other hand, two peers can have different tokens of the same evidence. So, if I read in the Guardian that P, and my peer reads in a different copy of the Guardian that P, then we have identical evidence, despite the fact that the source of our evidence was different[39]. This seems to correspond to what is going on in RESTAURANT-A. Although the two peers do the calculation independently, the calculation itself is the same, and so each peer has a different token of the same type of evidence. Their evidence is in some sense identical. Higher-order evidence, even if received from different peers, also qualifies as identical evidence. If I speak to four peers who all believe that P, and my peer speaks to a different four peers who also all believe that P, then we have exactly the same, and hence identical higher-order evidence, even if it doesn't come from the same sources. Our evidence is literally the same, and not merely similar as it would be in PERCEPTION[40].

In conclusion, the peerhood requirement should be weakened so as to allow that two people can be peers if they share at least similar evidence, evidence which is equally likely to lead them to the correct conclusion regarding P. I want to allow that if I have spoken to a peer (P1) with degree of belief 0.6, and a friend has spoken to a different peer (P2) also with degree of belief 0.6, then we have identical evidence and remain peers, even though P1 may not be the same person as P2. This re-interpretation has the advantage that it fits with Elga's definition of peerhood, EP4. If two people

[38] Perceptual cases are often used to motivate arguments that suggest that peer disagreement should lead an agent to suspend belief in a proposition. However, what I think the above discussion shows is that perceptual cases are first and foremost cases of testimony, and not straightforward disagreement. Any disagreement that arises is prior to the evidence being fully shared. Once new first-order evidence is provided, via the testimony of an epistemic peer and evidence is fully shared, then agreement, usually as suspended judgement, quickly follows. This differs from more interesting cases where the agents share all the evidence and still persist in disagreeing.

[39] Thanks to Allan Hazlett for suggesting this example.

[40] This becomes slightly less obvious in the degrees of belief case. If I speak to two peers with credences 0.7 and 0.8 that P, and my friend speaks to two peers with credences 0.6 and 0.9, does this qualify as the same evidence? Again, arguably yes. Both of us have spoken to two peers who believe that P, and in each case, our peer's credences average to 0.75. It does seem that my total evidence would be the same in both cases.

have similarly good but not identical evidence, they are still equally likely to be mistaken and hence, they are peers.

4.5 Diachronic Disagreements between Multiple Peers

I now want to consider what would happen if we add a third peer to the case in Section 4.3. What if Tom first encounters Max at t1, and then instead of re-encountering Max at t2 he encounters a different peer, Jane? And how important is the order in which Max and Jane are encountered in determining Tom's resulting credence at t2? To explore these questions assume that at t0 Tom and Jane have the same starting credence that God exists (0.8)[41] and Max has credence (0.2) in the same proposition. All three consider each other to be peers in line with EP4 and all credences are based on exactly the same first order evidence, e, relevant to the proposition that 'God Exists'. Synchronically, the EWV suggests that the reasonable credence on discovering their disagreement here would be (0.6)[42]. Diachronically however, the following two cases are possible:

Case A: Tom encounters Max and then Jane

t1) Tom (0.8) encounters Max (0.2), they apply the EWV and both move to credence 0.5.

t2) i) Tom (0.5) encounters Jane (0.8). Tom shares his additional evidence (Max's initial credence) with Jane to restore peerhood. Jane revises her credence to 0.5 on the basis of this new evidence.

ii) Having now fully shared their evidence and as a result of their agreement, both remain at credence 0.5.

Case B: Tom encounters Jane and then Max

t1*) Tom (0.8) encounters Jane (0.8), they apply the EWV, and both remain at credence 0.8.[43]

t2*) i*) Tom (0.8) encounters Max (0.2). Tom shares his additional evidence (Jane's initial credence) with Max to restore peerhood. Max revises his credence to 0.5 on the basis of this new evidence.

[41] Though note as discussed in Chapter 3, they need not share the same credence to agree about the all-or-nothing proposition.
[42] (0.8+0.8+0.2)/3 = 0.6
[43] Following my discussion in Chapter 3, we could alternatively say that both raise their confidence slightly following their agreement in (t2ii) and (t1*). Even with this adjustment, Tom's resulting credences at (t2ii) and (t2ii*) would still be different (assuming that disagreements were still recognised by splitting the difference).

ii*) Having now fully shared their evidence, Tom (0.8) and Max (0.5) apply the EWV and move to credence 0.65.

The three peers are identical in both the diachronic and synchronic cases, and at t0 all share the same first-order evidence, which remains unchanged throughout each case. But in the synchronic case Tom ends up with credence 0.6 that P. However in the diachronic case despite encountering the same peers, he ends up with a different credence, and worse, this credence varies with the order in which those peers were encountered (0.5 or 0.65).

Taking the diachronic cases first of all, the difference in resultant beliefs here can be attributed to the fact that Tom doesn't have the same evidence in (t2) as in (t2*) despite encountering exactly the same peers in both cases. In Case A, his total evidence at (t2ii) comprises e, *a peer with credence 0.2* and a peer with credence 0.8. In Case B, his total evidence at (t2*ii) comprises e, a peer with credence 0.8, and a *peer with credence 0.5*. It follows that Tom (A) and Tom (B) don't have similar evidence at (t2ii) and (t2ii*) respectively. Hence whilst it might be difficult to say who is better placed to adjudicate on P, this is not a direct failure of CEP. This kind of case demonstrates the difficulties involved in retaining identical or even similar evidence diachronically. Even if based upon the first-order evidence, multiple agents count as peers, as soon as some variation in the order in which they are encountered is introduced, they cease to have even similar total evidence, and hence their resulting beliefs will differ.

I end this section by considering a case in which Tom *does* have similar evidence at (t2) and (t2*) and asking whether this still provides a counter-example to CEP. Here (P1 – P6) just represent six of Tom's peers at t0, all of whom share the same first-order evidence, e.

Case C: Tom encounters a peer with credence 0.6, and then a peer with credence 0.4.

t0: The peers' respective credence's based upon the evidence, e, are as follows: Tom = 0.6, P1 = 0.6, P2 = 0.2, P3 = 0.6

t1: Tom (0.6) encounters P1 (0.6). They are epistemic peers as both share the same evidence, e. They therefore apply the EWV and both remain at credence 0.6.

Separately, at t1, P2 (0.2) encounters P3 (0.6). They are epistemic peers as both share the same evidence, e. They therefore apply the EWV and move to credence 0.4.

t2: Tom (0.6) encounters P2 (0.4). At this stage, both have evidence e, and both have encountered an epistemic peer with credence 0.6, they thus have similar higher-order evidence and remain epistemic peers. They apply the EWV and move to credence 0.5.

Case D: Tom encounters a peer with credence 0.4, and then a peer with credence 0.6.

t0*: The respective credence's based on evidence, e, are as follows: Tom = 0.6, P4 = 0.4, P5 = 0.8, P6 = 0.4

t1*: Tom (0.6) encounters P4 (0.4). They are epistemic peers as both share the same evidence, e. They apply the EWV and move to credence 0.5.

Separately, at t1, P5 (0.8) encounters P6 (0.4). They are epistemic peers as both share the same evidence, e. They therefore apply the EWV and move to credence 0.6.*

t2*: Tom (0.5) encounters P5 (0.6). At this stage, both have evidence e, and both have encountered a peer with credence 0.4, they thus share similar higher-order evidence and remain epistemic peers. They apply the EWV and move to credence 0.55.

Tom's resulting credence at t2 having encountered a peer with credence 0.6 followed by a peer with credence 0.4 is 0.5. In t2* however, having encountered a peer with credence 0.4 followed by a peer with credence 0.6, his resulting credence is 0.55. The order has led to a different resulting credence. This time, although he still doesn't have *identical* evidence at t2 and t2*, Tom does have *similar* evidence. In both C and D, his total evidence at this stage is the first-order evidence e, a peer with credence 0.4 and a peer with credence 0.6. So here, we do have a failure of the CEP. The same agent with similar total evidence has a different resultant credence depending on the order in which that evidence is encountered.

Despite this, it could still be argued that at t2 and t2* Tom's evidence is not sufficiently similar to constitute a counter-example to CEP. To see why, we need to look in detail at the composition of the total evidence in each case[44]:

Evidence C	**Evidence D**
C1) The first order evidence, e.	D1) The first order evidence, e
C2) A peer's credence that p = 0.6 on the basis of e, call this e+.	D2) A peer's credence that p = 0.4 on the basis of e, call this e*
C3) A peer's credence that p = 0.4 on the basis of e +, call this e++.	D3) A peer's credence that p = 0.6 on the basis of e*, call this e**.

[44] Many thanks to Allan Hazlett for helpful discussion around these cases and suggesting this way of presenting the problem.

The problem arises as Evidence C and Evidence D aren't just the same three elements in a different order. Although (C1) = (D1), it isn't the case that either (D3) = (C2) or that (D2) = (C3). Whilst similar, for example (C2) and (D3) both say that a peer's credence that P is 0.6, the total body of evidence in play at each stage is different, and hence what is meant by peerhood is also slightly different. Whilst still undesirable for the EWV, this is not a direct failure of CEP, and perhaps the marginal difference in resulting credence in the two cases (0.5) and (0.55) can just be attributed to the fact that the evidence is similar, rather than identical.

4.6 Treating Diachronic cases Synchronically.

Cases A and B highlight that diachronic applications of the EWV may result in a loss of identity of evidence, with a corresponding loss of peerhood. Cases C and D illustrate that even with similar evidence, diachronic applications of the EWV may also result in a failure of commutativity. Even if ultimately it is argued that these results arise from a difference in evidence and hence don't constitute a counter-example to CEP this still seems an undesirable outcome. We don't want contingent facts about the order in which we encounter our peers to affect our beliefs in this way. So is there any way for an epistemic agent to guard against these results, and ensure that the diachronic cases return the same result as (relatively unproblematic) synchronic cases?

One possibility would be to stipulate that whenever an agent encountered a new peer the rational attitude to adopt regarding P would be the average of beliefs based purely upon the first-order evidence, e, not taking account of any higher-order evidence which had been received in the meantime. So at t2, rather than updating based upon his belief as it was at t1, Tom should just update his belief as though he had received all the information (namely, Max and Jane's initial credences) simultaneously at t0. Each time a new peer is encountered, an agent should update by averaging based upon what their belief *would have been*, had they encountered all the peers (and therefore, higher order evidence) simultaneously. The attitudes that matter therefore, are the attitudes based only on the original first-order evidence. This certainly seems to be Kelly's (2010) understanding of what the EWV implies for cases of disagreement (agreement) with multiple peers:

> 'the proponent of the Equal Weight View will insist that, at time t2, what one is rationally required to believe is determined by averaging the *original opinions* of the two peers; moreover, if, at an even later time t3, one becomes aware of the opinion of a third peer, then what one is rationally required to believe will be determined by averaging the *original opinions* of the three peers; […] In general, for any time tn, a proponent of the Equal Weight View will hold that what one is rationally required to believe is entirely fixed by averaging the opinions of the n peers' (2010, 130, my italics).

A worry here is that if we are only concerned with taking into account the original opinions of our epistemic peers based purely on the first-order evidence then this fails to take account of other higher-order evidence which other peers have in turn received from disagreements or agreements with further peers which have not been encountered by the agent in question. If we only consider people's original beliefs, then this evidence falls out which contradicts Kelly's own assertion that the two kinds of evidence, first-order and higher-order, qualify in exactly the same way in determining reasonable beliefs (2010, 133). To illustrate this, consider the following case:

> Tom's original belief based on the first-order evidence is 0.8 at t0. He then meets a Jane whose original belief at t0 was also 0.8. However, Jane has since spoken to Adam at t1 whose belief was 0.2, and hence revised her belief to 0.5 which is where it stands when she encounters Tom at t2. Tom has never met Adam. So when Tom meets Jane at t2, does he revise to (0.8+0.8)/2 = 0.8, or does he revise to (0.5+0.8)/2 = 0.65? If it is only her original belief we are concerned with, then it seems any higher-order evidence picked up along the way just falls out. All Tom should be interested in is Jane's belief at t0.

It therefore seems that Kelly's reading of the EWV is too simplistic; we need to be more specific. If you and the peer you are disagreeing with have encountered only the *same* epistemic peers, then in diachronic cases you should both update your beliefs by taking the average of what your belief would be had you encountered all those peers simultaneously. However, if you have both encountered *different* peers, then it seems you should want to take this information into account as well. Hence, having shared this information, you should just average your current beliefs. From being what appeared a very simple rule for belief updating in the case of one-off disagreements between two epistemic peers, it seems the EWV when applied as weighted-averaging quickly becomes very complex to apply as both time and multiple peers are added to the mix.

5.0 Conclusion

This paper has undertaken a detailed investigation of Elga's (2007) Equal Weight View, its relationship to other conciliatory positions, and its consequences when understood as a view requiring a weighted average approach to belief revision. The traditional disagreement debate has been extended to include agreement cases and to consider not only synchronic but also diachronic applications of the view. This approach has resulted in new and often unexpected problems, summarized below.

Having clarified the relationship between all-or-nothing and degrees of belief, the main result in Chapter 2 was that an all-or-nothing attitude of 'suspending judgement' turned out not to be equivalent to degree of belief 0.5 after all. Three possible understandings of suspending judgement

were differentiated; broad, intermediate and narrow, and it was argued that suspending judgement was better understood in an intermediate sense represented by an interval of credences, with the size of the interval informed by the amount and quality of available evidence and the distance between the respective peer's credences prior to disagreement.

In Chapter 3 I argued that all conciliationists should be committed to peer agreement raising confidence. Although consistent with the spirit of the EWV, the view fails to return this result when understood to require 'splitting the difference'. I suggested that agreement cases can display an ambiguity when determining which proposition is under consideration, which can in turn lead to it being under-determined as to whether peers are agreeing or disagreeing. In agreement cases it only makes sense to 'split the difference' when credences are read as representing beliefs about probabilities, and yet this interpretation was explicitly ruled out in Chapter 2. It followed that belief revision qua weighted averaging should be restricted in application to disagreement cases, if at all.

A move to a diachronic framework in Chapter 4 resulted in a need to clarify what it is for peers to share evidence, with a resulting weakening in the peerhood condition to allow for *similar* if not *identical* evidence. Having argued that any reasonable account of disagreement should respect the commutativity of evidence, I demonstrated that diachronic applications of the EWV give rise to different resultant beliefs when compared with synchronic cases involving the same peers and first-order evidence and furthermore that the resulting beliefs differed depending on the *order* in which peers were encountered. This was ultimately explained by the fact that in encountering the same peers in different orders, an agent could actually end up with different higher-order evidence, and hence commutativity was not violated. However, a modified case in which both first-order and higher-order evidence was shared still resulted in different beliefs. Again, this difference was dependent only on the order in which the higher-order evidence was encountered; a result which I concluded was unacceptable for the EWV. I ended the chapter by suggesting that one way in which to avoid these problems was to update diachronic beliefs 'as if' the evidence had been encountered synchronically.

What became clear throughout the paper is that understanding the EWV as requiring 'weighted averaging' is an overly-simplistic approach, often inconsistent with the spirit of the view as defined by Elga (2007). This conclusion is in line with the work of Shogenji (2007) and Jehle and Fitelson (2009) whose papers demonstrate that 'weighted averaging', whilst desirable in terms of simplicity and fit with the literature, when formalized turns out to be 'at best *incomplete*, and at worst *synchronically incoherent*' (*ibid*, 284). Going forward then, the challenge is to find a principled way to apply the EWV across all types of cases, disagreement and agreement, synchronic and diachronic. It would also be interesting to revisit the objections which have been raised against the EWV to date

and determine the extent to which their success rests on the assumption that the EWV is to be applied as weighted averaging.

Although I have stopped short of proposing a positive alternative here, I want to end by briefly suggesting some plausible restrictions on any suitable candidate. Most obviously, any mechanism for belief revision should respect the spirit of the EWV, which I take to be that our peer's beliefs should act as a check upon our own beliefs. Also desirable although perhaps less essential is that the mechanism preserve peerhood and identity (or similarity) of evidence diachronically, such that an agent would have the same resulting credence regardless of the order in which peers were encountered. Finally, one candidate which can be ruled out is any mechanism for belief revision based upon some fixed value which is added to an agent's credence following agreement and subtracted following disagreement. For example, if an agent was required to add 0.05 to his credence for each agreeing peer encountered then he could potentially reach a credence greater than 1, which is impossible. Agreement should cause beliefs to approach but never reach 1. Additionally, a fixed figure would take no account of the extent of the disagreement. Intuitively, we want peers who are at opposite extremes of the scale to be required to make more extensive revisions than those whose credences fall close; we want belief revision to factor in the proximity of a peer's credence in determining how an agent's belief should be revised. In conclusion, any belief revision candidate should be a function of i) an agent's credence, ii) its proximity to the peer's credence and iii) proximity to the extremes of the credence scale (0 and 1).

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